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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Shinji Takeda

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EXAMINER

KARIKARI, KWASI

ART UNIT

PAPER NUMBER

2617

NOTIFICATION DATE

DELIVERY MODE

06/11/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/782,929	Applicant(s) TAKEDA ET AL.	
	Examiner KWASI KARIKARI	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-9 and 11-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-9 and 11-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/23/2008</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, filed on 03/04/2008 with respect to claims 1, 3-9 and 11-28 in the remarks, have been considered but are moot in view of the new ground(s).
2. Claims 2 and 10 have been cancelled; and claims 25-28 have been added.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant recites the claimed limitations, "the plurality of radio stations" in claim 9, however, there are insufficient prior antecedent basis for these limitations in the claims.

For examination purposes, the examiner will treat the rejected claimed limitations in the broadest interpretation of the Applicant's specification. Appropriate corrections are required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35

U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35

U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 3-9,11 and 13-28 are rejected under U.S.C. 103(a) as being unpatentable over Hulyalkar et al., (U.S 6,751,196), (hereinafter Hulyalkar) in view of Davis (U.S 20030078010 A1), (hereinafter Davis).

Regarding claims 1, 3, 9 and 19, Hulyalkar discloses a multi-hop communication system/method configured by a radio control station (= central controller; and controller could be any station, see col. 2, line 66- col. 3, line 25) connected to a core network and a plurality of radio stations for relaying signals there between (= exchange of information in an ad-hoc wireless ATM system, see col. 2, lines 56-65), wherein, the radio control station comprises:

a control signal (= control plane) transmission/reception unit configured to transmit/receive a control signal and an information signal (= wireless user plane,

beacon signal and exchange of notes, see col. 2, line 55- col. 3, line 25; and col. 4, lines 10-30) and for conducting communication with the plurality of radio stations (= centralized controller transmits beacon signal, see col. 2, line 66- col. 3, line 25 and Fig. 2a); and

an information signal transmission/reception unit configured to transmit/receive the information signal; (= controller operates the control and user communication planes, see col. 3, lines 40-60);

a communication route determiner configured to determine a communication route through the multi-hop communication system for the control signal independently from a communication route through the multi-hop communication system for the information signal prior to conducting communication with the plurality of radio stations (= slot allocation, see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30), wherein the communication route determiner receives a usage inquiry from a radio station for inquiry usage of a communication channel handled by the radio control station and transmits/receives the information signal according to a usage notification that is a response to the usage enquiry (= each station monitor and assess the quality of reception of transmission; and quality assessments are forwarded to a controller, see col. 2, lines 14-25; and col. 5, lines 6-22); and

each radio station (= station) comprises:

a control signal transmission/reception unit configured to transmit/receive the control signal (= communication between controller and station using control plane, see Fig. 2a and 2b); and

an information signal transmission/reception unit configured to transmit/receive the information signal (= communication between controller and station using wireless user plane, see Fig. 2a and 2b); but fails to specifically disclose that the control signal have a lower bit rate than an information signal, i.e., control and information signals operate on different bit rates.

However, Davis teaches that generally, access, pilot, fundamental and dedicated control channel modes of operation have a lower data rate, relatively high processing gain, and a lower signal to noise requirement at the base station. Conversely, each data, or supplemental, channel mode of operation generally has a higher data rate, relatively low processing gain, and a higher signal to noise requirement at the base station (see Pars. 0017 and 0038-40; whereby, for example, the pilot channel is being associated with the "control signal" and the supplemental channel is being associated with the "information signal").

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davis with the system of Hulyalkar for the benefit of achieving a system that allows a mobile to adjust its data rate when the mobile moves to different cell (see Par. 0022).

Regarding claim 4, as recite in claim 3, Hulyalkar further discloses the radio control station, the communication route determiner determines a communication route through the multi-hop communication system for the information signal by a different independent process from the determination of the communication route through the

multi-hop communication system for the control signal (= location of time slot for communication; and the usage of independent control and user link, see col. 3, lines 9-25, 38-60, col. 4, lines 11-16 and Figs. 2a and 2b).

Regarding claim 5, as recite in claim 3, Hulyalkar further discloses the radio control station, the communication route determiner transmits a communication route acquisition request to the radio station for acquisition of a communication route, and the communication route determiner determines a communication route based on a response to the communication route acquisition request transmitted by the radio station (= transmission request and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 6, as recite in claim 3, Hulyalkar further discloses that the radio control station, further comprising: a communication channel controller configured to transmit a usage notification that indicates usage of a communication channel handled by the radio control station (see col. 3, lines 26-37, col. 4, line 4- col. 5, line 5, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 7, as recite in claim 3, Hulyalkar further discloses the radio control station, the communication route determiner determines a communication route to the radio station and transmits a communication route determination notification that notifies the communication route to a radio station located on the communication route

(allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 8, as recite in claim 7, Hulyalkar discloses the radio control station, the communication route determiner assigns a communication channel to be used in the radio station located on the determined communication route (see col. 3, lines 9-25).

Regarding claim 11, as recite in claim 9, Hulyalkar further discloses that the radio station further comprising: a decision unit configured to decide whether or not communication is directly conducted with the radio control station based on a reception level of the control signal received by the control signal transmission/reception unit (see col. 5, lines 6-22 and col. 5, lines 53-65).

Regarding claim 13, as recite in claim 9, Hulyalkar further discloses that the radio station, further comprising: a first relay controller configured to transmit a relay control signal to an other station for requesting a relay of the information signal and to set a communication route to the radio control station via the other station according to a response relay control signal that is a response to the relay control signal (= transmission request and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 14, as recite in claim 13, Hulyalkar further discloses that the radio station, further comprising: a communication route selector configured to select a radio station satisfying a prescribed condition regarding a communication state if the other

radio station transmitted the response relay control signal (= transmission request and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40).

Regarding claim 15, as recite in claim 9, Hulyalkar further discloses that the radio station, further comprising: a second relay controller configured to receive a relay control signal requesting a relay of the information signal from other station, to transmit a response relay control signal that is a response to the relay control signal and to set a communication route from the other radio station to the radio control station (= transmission request and the allocation of slot, see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 16, as recite in claim 15, Hulyalkar further discloses that the radio station, the second relay controller transmits the response relay control signal notifying ability of the relay of the information signal based on a reception level of the received response relay control signal (see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 18, as recite in claim 14, Hulyalkar further discloses the radio station, wherein an information indicating an interference level is included in the response relay control signal, and the communication route selector selects a radio station based the interference level included in the response relay control signal (see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 20, as recite in claim 1, Hulyalkar further discloses the multi-hop communication system according to claim 1, the communication route determiner determines whether or not the communication route for the information signal can be set

based on a reception level of the control signal (see col. 3, lines 9-25 and col. 4, lines 1-40, col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 21, as recite in claim 3, Hulyalkar further discloses that the radio control station, the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal (see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30).

Regarding claim 22, as recite in claim 19, Hulyalkar further discloses the multi-hop communication method according to claim 19, in the determining step, whether or not the communication route for the information signal can be set is determined based on a reception level of the control signal (see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30).

Regarding claim 23, as recite in claim 3, Hulyalkar further discloses the radio control station, wherein the communication route determiner is configured to determine the communication route, wherein the determined communication route includes at least one radio station (see col. 3, lines 9-25, lines 38-60; and col. 4, lines 20-30).

Regarding claim 24, as recite in claim 3, Hulyalkar further discloses the radio control station, wherein the communication route determiner is configured to determine the communication route as a list of stations, the determination of the communication route being independent of an allocation of dedicated physical data channels used for

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communication between the stations (see col. 2, line 66- col. 3, line 25, col. 3, lines 40-60; and Fig. 2a).

Regarding claim 25, as recite in claim 14, Hulyalkar further discloses the radio station, wherein information indicating a required transmission power is included in the response relay control signal (see col. 3, line 44- col. 4, line 56; col. 4, lines col. 5, lines 38-65; and col. 6, lines 31-45); but fails to teach that the communication route selector selects a radio station based on the “required transmission power”.

However Davis teaches that “the communication route selector selects a radio station based on the “required transmission power” (see [0036 and 0049-50]).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davis with the system of Hulyalkar for the benefit of achieving a system that allows a mobile to adjust its data rate when the mobile moves to different cell (see Par. 0022).

Regarding claim 26, as recite in claim 14, Hulyalkar further discloses the radio station, wherein the communication route determiner is configured to determine the communication route for the information signal that minimizes a total transmission power of radio station relaying the information signal (see col. 2, lines 7-30; col. 3, line 44- col. 4, line 56; col. 4, lines col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 27, as recite in claim 14, Hulyalkar further discloses the radio station wherein the communication route determiner is configured to determine the communication route for the information signal by selecting a radio station having a smallest relative transmission power (see col. 2, lines 7-30; col. 3, line 44- col. 4, line 56; col. 4, lines col. 5, lines 38-65; and col. 6, lines 31-45).

Regarding claim 28, as recite in claim 14, Hulyalkar fails to disclose the radio station wherein the communication route determiner is configured to determine the communication route for the information signal to maximize a signal-to-interference ratio while minimizing a number of hops in the communication route.

However, Davis teaches the communication route determiner is configured to determine the communication route for the information signal to maximize a signal-to-interference ratio while minimizing a number of hops in the communication route (see [0049-50]).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Davis with the system of Hulyalkar for the benefit of achieving a system that allows a mobile to adjust its data rate when the mobile moves to different cell (see Par. 0022).

5. Claims 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hulyalkar in view of Davis and further in view of Palenius (U.S. 6,904,290), (hereinafter Palenius).

Regarding claim 12, as recited in claim 11, the combination of Hulyalkar and Davis fails to disclose that “the decision unit changes a threshold for the reception level according to a transmission speed of the information signal and to decide whether or not communication is directly conducted with the radio control station based on a result of comparison of the reception level and the threshold”.

However, Palenius teaches that the decision unit changes a threshold for the reception level according to a transmission speed of the information signal and to decide whether or not communication is directly conducted with the radio control station based on a result of comparison of the reception level and the threshold (see col. 1, lines 27-55; col. 3, lines 41-58 and col. 4, lines 32-55).

It would therefore have been obvious to one of the ordinary skill in the art to combine the teaching of Palenius with the system of Hulyalkar and Davis for the benefit of achieving a system that manages power offset between channels in a communication system (see col. lines 19-52).

CONCLUSION

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See attached form PTO-892 for cited references and the prior art made of record.

Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. SEE MPEP 2141.02 [R-5] VI. PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS: A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) In re Fulton, 391 F.3d 1195, 1201, 73 USPQ2d 1141, 1146 (Fed. Cir. 2004). >See also MPEP §2123.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kwasi Karikari whose telephone number is 571-272-8566. The examiner can normally be reached on M-T (9am - 7pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Appiah can be reached on 571-272-7904. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8566. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published

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applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kwasi Karikari
Patent Examiner
Art Unit 2617
06/03/2008

/Charles N. Appiah/

Supervisory Patent Examiner, Art Unit 2617